CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC HEALTH
AIR MANAGEMENT SERVICES

RACT PLAN APPROVAL

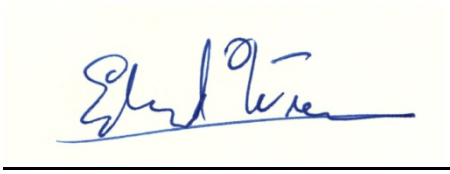
Effective Date: January 9, 2015

Expiration Date: None

Replaces Permit Nos. PA Permit Numbers 51-1501 and 51-1517 dated August 1, 2000

In accordance with provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and after due consideration of a Reasonably Available Control Technology (RACT) proposal received under the Pennsylvania Code, Title 25, Chapter 129.91 thru 129.95, of the rules and regulations of the Pennsylvania Department of Environmental Protection (PADEP), Air Management Services (AMS) approved the RACT proposal of the Facility below for the source(s) listed in section 1.A. Emission Sources of the attached RACT Plan Approval.

Facility:	Philadelphia Energy Soultions Refining and Marketing LLC (PES)
Owner:	Philadelphia Energy Soultions Refining and Marketing LLC
Location:	Girard Point Processing Area located at 3001 Penrose Ave Point Breeze Processing Area located at 3144 Passyunk Ave
Mailing Address:	3144 Passyunk Ave., Philadelphia, PA 19145
SIC Code(s):	2911
Plant ID:	1501 and 1517
Facility Contact:	Charles Barksdale
Phone:	(215) 339-2074
Permit Contact:	Charles Barksdale
Phone:	(215) 339-2074
Responsible Official:	Nithia Thaver and James Keeler
Title:	General Managers



Edward Wiener, Chief of Source Registration

1/9/15
Date

The RACT plan approval is subject to the following conditions:

1. The purpose of this Plan Approval is to establish Nitrogen Oxides (NOx)/Volatile Organic Compound (VOC) Reasonably Available Control Technology (RACT) for PES Girard Point Processing Area and Point Breeze Processing Area. This includes the following emission sources and control equipment:

   A. Emission Sources

   (1) Process Heaters: Unit 137: F1 heater (415 MMBTU/hr)
   F2 heater (155 MMBTU/hr)
   F3 heater (60 MMBTU/hr)
   All three heaters burn refinery fuel gas.

   (2) Process Heater: Unit 231: B-101 heater (104.5 MMBTU/hr) fires refinery fuel gas.

   (3) Process Heater: Unit 433: H-1 heater (243 MMBTU/hr) Heater fires refinery fuel gas.

   (4) Process Heaters: Unit 1332: H-400 heater (186 MMBTU/hr)
   H-401 heater (233 MMBTU/hr)

   H-2 heater (60 MMBTU/hr)

   These heaters burn refinery fuel gas.

   (5) Process Heater: Unit 1232: B-104 heater (70 MMBTU/hr) Heater fires refinery fuel gas.

   (6) Boiler House #3: Boiler #37 (495 MMBTU/hr)
   Boiler #39 (495 MMBTU/hr)
   Boiler #40 (660 MMBTU/hr)
   These boilers fire refinery fuel gas.

   (7) Crude Unit 210: Section A HTR H101 (192.0 MMBTU/hr)
   Section B HTR H201 (254.0 MMBTU/hr
   Section C HTR 13H1 (235.4 MMBTU/hr)
   These heaters above fire refinery fuel gas.

   (8) Hydrocracker Unit 859: HTR 1H1 (98 MMBTU/hr) Unit fires refinery fuel gas.

   (9) Reformer Unit 864: HTR PH11 (74 MMBTU/hr)
   HTR PH12 (85.1 MMBTU/hr)
   These heaters fire refinery fuel gas.

   (10) Distillate HDS Unit 865: HTR 11H1 (87.3 MMBTU/hr after installation of ULNBs)
   HTR 11H2 (64.2 MMBTU/hr)
   These heaters fire refinery fuel gas.

   (11) Gas-Oil HDS Unit 866: HTR 12H1Heater (61.2 MMBTU/hr) fires refinery fuel gas

   (12) Reformer Unit 860: HTR 2H3 (174.67 MMBTU/hr) Unit fires refinery fuel gas.

HTR 2H5 (155 MMBTU/hr) Unit fires refinery fuel gas.

HTR 2H2 (69.78 MMBTU/hr) Unit fires refinery fuel gas.
HTR 2H4 (99.44 MMBTU/hr) Unit fires refinery fuel gas.

HTR 2H7 (59 MMBTU/hr) Unit fires refinery fuel gas.

(13) 868 FCCU HTR 8H101 Unit fires refinery fuel gas

(14) 868 FCCU Catalyst Regenerator

(15) Cooling towers

(16) Fugitive leaks: valves, flanges, compressors, pumps, pipes.

(17) Unit 870: HTR H01 (97 MMBTU/hr)
HTR H02 (53 MMBTU/hr
These heaters fire refinery fuel gas.

(18) Unit 1232 FCCU

(19) Girard Point Barge Loading (P130)

(20) Point Breeze Marine Barge Loading (P636)

B. Control Equipment

(1) Ultra-low NOx burner (ULNB) systems are installed on the following sources to control NOx emissions:
Unit 433 H-1 heater
Unit 1232 B-104 heater
#3 Boiler House boilers #37, #39, and #40.
Unit 210 H201 heater
Unit 870 H01 and H02 heaters
Unit 859 1H1 heater
Unit 137 F-3 heater
Unit 1332 H-2 heater.

(2) Flue Gas Recirculation (FGR) is also installed on #3 Boiler House boilers #37, #39, and #40.

(3) Selective Catalytic Reduction (SCR) shall be installed on Unit 1332 H-400 and H-401 heaters. PES shall operate the SCR system while operating the heaters *(H-400/401)* except during times required to replace SCR catalyst or to do maintenance to the SCR/air pre-heater system or to operate the caters at low firing rate during reformer catalyst regenerations. PES shall take a daily NOx sample during these maintenance periods when it is necessary to by-pass the *SCR/air* pre-heater system and the NOx CEM, and the heaters are operated in natural draft mode. During these natural draft operating periods the maximum allowable NOx limitation will be 0.15 lb/MMBTU on a daily average, as defined in Condition 4.B below. All emissions during the natural draft duration shall be counted in the rolling 365-day limit in Condition 4.B.

(4) Thermal Oxidizer shall be maintained on Girard Point Barge Loading (CD-011).

(5) Marine Vapor Collection and Control System (MVCACS) shall be maintained for Point Breeze Barge loading.

2. This approval requires and authorizes:

A. The installation of Ultra Low NOx Burners on 231 B101 heater and 865 11H1 heater to comply with RACT requirements 18-month after the issuance of this plan approval.
B. PES will use combustion tuning to comply with RACT requirements for the following heaters:

Unit 137: F1 heater, F2 heater, F3 heater
Unit 1332: H-400 heater, H-401 heater, H-2 heater
Crude Unit: 210A HTR H101, 210C HTR 13H1
Hydrocracker Unit 859: HTR 1H1, HTR 1H2, HTR 1H3
Reformer Unit 864: HTR PH3, HTR PH5, HTR PH1, HTR PH2, HTR PH4, HTR PH11, HTR PH12

Distillate HDS Unit 865: HTR 11H2
Reformer Unit 860: HTR 2H3, HTR 2H5, HTR 2H4, HTR 2H2, HTR 2H7
Gas Oil HDS Unit 866: HTR 12H1
Unit 868: HTR 8H101

C. All process heaters and boilers are limited to refinery fuel gas and will be capped at the heat input specified in the table below.

Process Unit	Source	Heat Input Cap (MMBTU/hr)
Unit 137:	F1 heater	415
	F2 heater	155
Unit 433:	H-1 heater	243
Unit 1332:	H-400 heater	186
Unit 1232:	B-104 heater	70
Boiler House #3:	Boilers #37, and #39	495
	Boiler #40	660
Reformer Unit 864	HTR PH2	45

D. PES shall monitor all fuel input to all heaters and boilers with BTU limitations on a daily basis to insure capacity limits are not exceeded or PES shall install fuel limiting devices on the heaters or boilers to keep capacities below allowable.

E. The 868 FCCU NOx emissions shall be limited to 100 ppmdv @ 0% O_2 on a 7-day rolling average 130.2 tons per rolling 365-day period. PES shall follow good combustion practices controlling the level of excess oxygen and CO promoter in the regenerator to minimize NOx emissions from the regenerator. A NOx Continuous Emission Monitoring System (CEMS) shall be operated on the unit.

F. The 1232 FCCU shall have Selective Catalytic Reduction (SCR). NOx emissions shall not exceed 30 ppmdv @ 0% O_2 on a 7-day rolling average and 208.28 tons per rolling 365-day period. The 12432 FCCU shall be operated with good combustion practices. A NOx Continuous Emission Monitoring System (CEMS) shall be operated on the unit.

G. PES shall utilize an equipment monitoring program in accordance with 40 CFR 63 subpart CC for VOC fugitive emissions from cooling towers.

H. PES shall utilize a fugitive emissions leak detection and repair program (LDAR) for all valves, pumps, flanges, and compressors in VOC service. Monitoring of components shall be conducted on a quarterly basis (gaseous service) and an annual basis (liquid service) for all sources not covered under an existing LDAR program.

I. Girard Point Barge Loading shall vent to a Thermal Oxidizer with a VOC destruction efficiency of at least 98% or control to an outlet of 20 ppmv VOC or less. The Thermal Oxidizer shall have a continuous temperature monitor and recorder.

J. Point Breeze Marine Barge Loading shall be operated with a Marine Vapor Collection and Control System (MVCACS). Vapors from the operation of the MVCACS shall be fed as a primary fuel to the process heaters and boilers in order to achieve a minimum of 98% VOC destruction efficiency or control to an outlet of 20 ppmv VOC or less.

3. RACT Implementation Schedule

A. PES shall immediately begin the implementation of the measures necessary to comply with the approved RACT Plan Approval.

B. Sources proposing combustion tuning to comply with RACT requirements of 25 PA Code 129.91(f) shall perform the annual combustion tuning by December 31st of each year not to exceed 12 months between tunings.

C. Sources applicable to presumptive RACT requirements of 25 PA Code 129.93(b)(2) shall complete the annual adjustment or tune-up by December 31st of each year not to exceed 12 months between tunings.

D. Sources proposing installing Ultra Low NOx Burners to comply with RACT requirements of 25 PA Code 129.91(f) shall perform combustion tuning annually by December 31st of each year not to exceed 12 months between tunings.

E. The 231 B101 heater shall be limited to 91 MMBTU/hr until the burners are installed. The 865 11H1 heater shall be limited to 72.2 MMBTU/hr until the burners are installed. The 0.03 lbs/MMBTU NOx emission limit listed below for each unit will not become applicable until the burners are installed.

4. Testing Requirements and Stack Emission Limitations

A. For units installing ULNB, PES shall conduct performance tests for NOx. The results of these tests have been submitted to AMS.

B. The final NOx RACT emission limits for the #3 Boiler House boilers, 137 Unit F1 heater, and Unit 210 H201 heater, have been established through the use of Department approved Continuous Emission Monitoring System (CEMS). Compliance with the limitations listed below will be on a 30-day rolling average based on hourly averages of CEM data for the Unit 137 F1 heater, on a daily average based on hourly averages of CEM data for limits noted as daily average, and on a 365-day rolling average based on hourly averages of CEM data for the other units. The limits for the Unit 231 B101 heater and Unit 865 11H1 heater are not applicable until the Ultra Low NOx Burners are installed.

Source	Limitation
Boiler House #3 – boilers #37, #39, and #40	0.040 lbs. NOx/MMBTU
Boiler House #3 – boilers #37, #39, and #40	0.10 lbs. NOx/MMBTU (daily average)
137 Unit F1 heater	0.230 lbs. NOx/MMBTU
Unit 210 H201 heater	0.03 lbs. NOx/MMBTU
Unit 231 B101 heater	0.03 lbs. NOx/MMBTU
Unit 865 11H1 heater	0.03 lbs. NOx/MMBTU
Process Heater Unit 1332 H-400 heater	0.06 lbs. NOx/MMBTU
Process Heater Unit 1332 H-401 heater	0.06 lbs. NOx/MMBTU
Process Heater Unit 1332 H-400 heater	0.15 lbs. NOx/MMBTU (daily average)
Process Heater Unit 1332 H-401 heater	0.15 lbs. NOx/MMBTU (daily average)

C. Compliance with emission limits for combustion sources listed below shall be determined by quarterly stack sampling with a portable NOx analyzer. After one year sampling, PES may petition AMS for semi-annual monitoring. AMS may, at any time, require three one-hour stack tests.

	Limitation (lbs. NOx/MMBTU
Source	Gas
Process Heater Unit 433 H-1 heater	0.060
Crude Unit 210A HTR H101	0.089
Crude Unit 210C HTR 13H1	0.104
F-2 @ 137 Unit	0.257
F-3 @ 137 Unit	0.060
B-101@ 231 Unit	0.122
H-2 @ 1332 Unit	0.040
B-104 @ 1232 Unit	0.177

1H-1 @ 859 Unit	0.035
PH-1 @ 864 Unit	0.167
PH-11 @ 864 Unit	0.145
PH-12 @ 864 Unit	0.119
11H-1 @ 865 Unit	0.113
2H-3 @ 860 Unit	0.163
2H-5 @ 860 Unit	0.163
2H-2 @ 860 Unit	0.350
2H-4 @ 860 Unit	0.270
2H-7 @ 860 Unit	0.157
Unit 865 11H2 heater	0.113
Unit 866 12H1 heater	0.113
Unit 868 8H101 heater	0.113
H01 @ 870 Unit	0.035
H02 @ 870 Unit	0.035

D. All annual combustion tuning shall at a minimum meet the requirements set forth in 129.93 (b)(2) through (5).

E. At least thirty (30) days prior to a performance NOx test, PES shall inform AMS of the date and time of the scheduled test.

F. PES shall conduct performance tests to determine compliance with the lbs NOx/MMBTU emission limits of this plan approval for the following heaters:

i. Within 180 days of the installation of ULNBs for the Unit 231 B101 Heater and the Unit 865 11H1 Heater.

ii. By June 08, 2016 for the Unit 210 H101 Heater, Unit 865 11H2 Heater, Unit 866 12H1 Heater, and Unit 868 8H101 Heater.

iii. Testing shall be conducted in accordance with 25 Pa. Code Chapter 139

G. The Unit 210 H201 Heater shall be equipped with continuous monitors and recorders for NOx and O_2. The continuous monitors and recorders shall meet the requirements of 25 Pa. Code Chapter 139.

H. Each heater listed below shall be limited to the following rolling 365-day heat input limits:

i. Unit 231 B101 Heater shall not exceed 856,000 MMBTU on a rolling 365-day basis.
ii. Unit 865 11H1 Heater shall not exceed 699,000 MMBTU on a rolling 365-day basis.
iii. Unit 865 11H2 Heater shall not exceed 500,000 MMBTU on a rolling 365-day basis.
iv. Unit 210 H101 Heater shall not exceed 1,643,000 MMBTU on a rolling 365-day basis.
v. Unit 210 H201A/B Heater shall not exceed 2,172,000 MMBTU on a rolling 365-day basis.
vi. Unit 866 12H1 Heater shall not exceed 456,000 MMBTU on a rolling 365-day basis.
vii. Unit 868 8H101 Heater shall not exceed 480,000 MMBTU on a rolling 365-day basis.

5. Recordkeeping and Reporting Requirements

A. The permittee shall maintain a file containing all the records and other data that are required to be collected to demonstrate compliance with NOx/VOC RACT requirements of 25 PA Code 129.91 - 129.94.

B. The records shall provide sufficient data and calculations to clearly demonstrate that the requirements of §129.91-129.94 are met.

C. Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.

D. Records shall be retained for at least two years and shall be made available to the Department on request.

7. The company shall not impose conditions upon or otherwise restrict the Department's access to the aforementioned source(s) and/or any associated air cleaning device(s) and shall allow the Department to have access at any time to said source(s) and associated air cleaning device(s) with such measuring and recording equipment, including equipment recording visual observations, as the Department deems necessary and proper for performing its duties and for the effective enforcement of the Air Pollution Control Act.

8. Revisions to any conditions approved as RACT by EPA will require resubmission as revision to the PA State Implementation Plan. The applicant shall bear the cost of public hearing and notification required for EPA approval as stipulated in 25 PA Code §129.9(h).